

Power Transformers



Partners in Power



Tailored to your requirements



You can count on our quality

Products

- Power transformers from 5 to 140 MVA up to Um 245 KV
ONAN / ONAF / OFWF / OFAF
16 2/3 Hz / 50 Hz / 60 Hz
- Oil chokes
- Single phase transformers
- Resonant circuit reactances
- Coupling transformers and reactors for ripple control
- Shunt reactors and current limiting reactors
- Transformers with line drop and parallel regulation
- Rectifier and furnace transformers

Repair

- All types of transformers > 5 MVA
- Manufacture of complete spare parts

Maintenance

Provider of services for everything to do with transformers

Quality management

The complete operational process is controlled by a tried and tested quality management system. The SGB Group is certified in accordance with

- ISO 9001
- ISO 14001
- Federal railways welding authorisation
- KTA 1401
- OHSAS 18001

Markets

The SGB group manufactures and tests transformers for the world market.

We comply with the standards of:

- DIN/VDE
- IEC 76
- British Standard
- ANSI/IEEE
- CAN/CSA
- NEMA
- UL
- ENEL
- ÖVE
- SVV
- and others

No-load losses / Noise

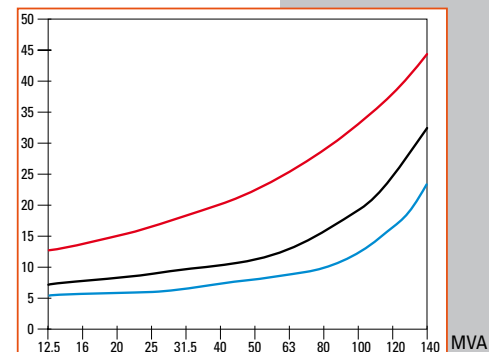
Up to the minute core-laying technology (step lap) and the application of high quality, extremely low loss sheet steel with low magnetism, guarantees the customer low no-load losses and noise emissions.

Short-circuit losses

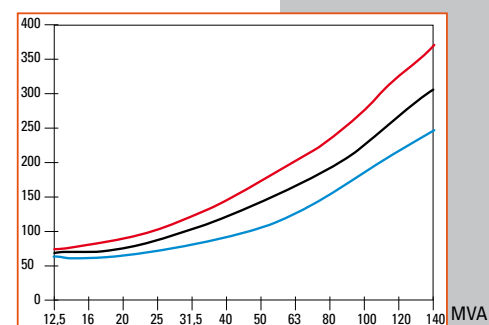
Thanks to the optimisation of the conductor cross sections, low-load losses can be achieved in relation to the additional losses. As a result, SGB transformers completely meet the technical as well as the economical requirements with regard to short circuit proofing.



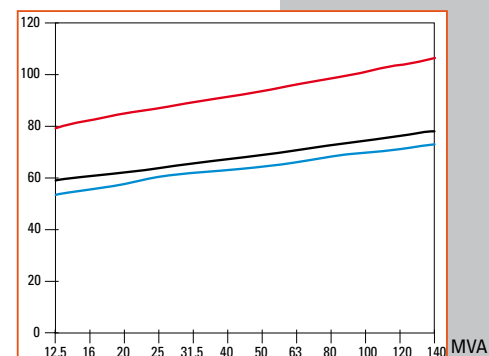
P_o (kW)



P_K (kW)



L_{WA} (dB)



- Values in accordance with standards
- Typical utility specification
- Values achievable by SGB

Good quality cores

Iron core design details

The SGB transformers cores contain good characteristics. Both the painstaking selection of the materials and the dependable design of the moulded pieces and their solid manufacture are decisive for the high quality.

The concurrence of these factors permits progressive optimisation of no-load losses and currents, in addition to noise levels. In the case of dimension limitations, even the most extreme customer demands can be accommodated.

- Cold-rolled grain-oriented sheet of steel from well known manufacturers in the best available quality, with a sheet thickness of 0.3, 0.27 and 0.23 mm.
- Computer-controlled core cutting equipment.
- 45° roof cut.
- Step lap process to mortise join the columns and yokes.
- Processing equipment for precise laminating
- Uniform core pressing through bindings and compacting steel frames.



Core before installation



Positioning of the core



Core-cutting equipment

Always well wound

Winding design details

It is not without reason that SGB trans-formers fulfil the highest requirements of reliability and long life. The winding process is carried out using machines especially constructed for this, which ensures high quality and precise results.

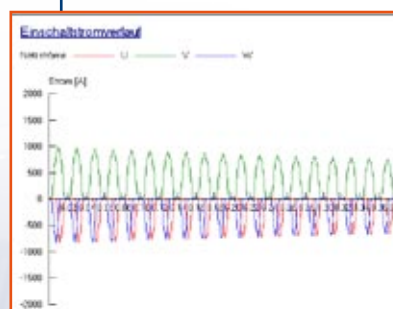


- The winding process is carried out by qualified personnel on the latest winding machines.
- The selection of the type of winding and conductor is made, taking the dimensioning currents and the dimensioning tension into account, together with the required test level as well as the expected thermal and mechanical stress.
- During the optimisation of the conductor cross-sections, the influence of the conductor size on the amount of the additional losses is equally considered, as are the requirements on the short-circuit proofing.
- The stabilisation of the axial winding dimensions is achieved through pre-drying, then establishing the defined winding lengths during application of the intended gripping force and the thorough, symmetrical design of the windings. At the same time, possible necessary measures of compensation must be included in the calculation to avoid unsymmetrical forces.
- The dispersed arrangement of the press-board barriers and oil extensions permit a modern isolation construction between the windings.
- The transformers show an adequate joint compression and / or gripping of the windings at the core, taking the occurrences of the axial short-circuit forces into account.
- The correctness of the basic methods of calculation and design principles is proved through repeated short-circuit tests. Proofing is carried out both on our own account and at the customer's request.
- In order to optimally use the winding space, the winding principles and the conductor types are carefully selected for each individual case.
- The stabilisation of the axial winding dimensions is achieved through predrying. The requirements of the dielectric strength and the short circuit proofing, are taken into account equally as much as the thermal requirements.

US-DRILLEITER LAGENWI	
Komm.: 1430349	
04148010 Wicklungsvorbereitung	Arbeitsplan : SPATZ NITZTRAPU Gruppe: AVT
04148020 Leisten auf Zylinder kleben	Beschreibung: Transformator komplett anfertigen
04148030 Leisten vor Spaltzylinder n	Kommissionnummer: 1440999 Rüstze
04148040 Spaltzylinder (Form O off	Zeichnungs-Nummer: K520201 Einzel
	Typ : D0TR 11500/110 Prozes
04148050 Spulenanfang (1 Leiter)	Erstellungsdatum : 19.11.1999 Auftr
04148060 Spulenanfang (2 Leiter)	Änderungsdatum : 19.11.1999 Auftr
04148070 Spulenanfang (3 Leiter)	Bearbeiter Gesamt
04148080 Lagenübergang m. Psp (1	
Pos Kap-Gr Beschreibung	
04148090 Lagenübergang m. Psp (1	10 Blechpaket (Kern aktiv)
04148100 Lagenübergang m. Psp (1	20 Kern komplett (Kern inaktiv)
04148105 Lagenübergang ohne Psp	30 US-Wicklung
	40 OS-Wicklung

Work preparation

Preparation of all manufacturing documents with the support of the modern PPS system



Calculation

Creation of all calculation documents using modern computers.



Design

CAD supported design

Values are measurable

Shielding – Resulting values

The shielding of the testing rooms with 82 mm thick perforated plate panels with regard to:

- Air conditioning (with cooling installation)
- Sound insulation
- HF-shielding

resulted in the following values:

Hall desired temperature value 20°C
Maximum increase during heating on + 5 K during this, 400 kW output which can be dissipated.

Sound-proof level: 42 dB walls,
37 dB Roller doors,
HF interference level 5 pc

	Steel construction hall	Concrete construction building
Length	42 m	42 m
Width	20 m	10 m
Height	14 m	9 m
Walled-in space	13,944 m ³	4,180 m ³

Most important test facilities

Some of the most important test facilities follow:

- Impulse voltage equipment 1600 kV / 60 kJ
- Alternating voltage test equipment 600 kV (75 kVA / 150 kVA) 100 kV (25 kVA)
- Frequency converter 60 Hz / 125-350 Hz / 125 Hz
- Testing transformers
- Audio frequency converter 83.33/100/116.67/183.33/200/216.67 Hz
- 16 2/3 - power supply by Deutsche Bahn AG
- Calibration laboratory to calibrate electrical measuring devices

Building details

The testing building comprises the steel construction hall, which is the actual test room, and a concrete construction building with the necessary rooms to serve as testing shops and to accommodate the testing machines.



Transformers for all the world



31,5 MVA 115/21 kV ONAN



30 MVA 110/11,5 kV ONAN



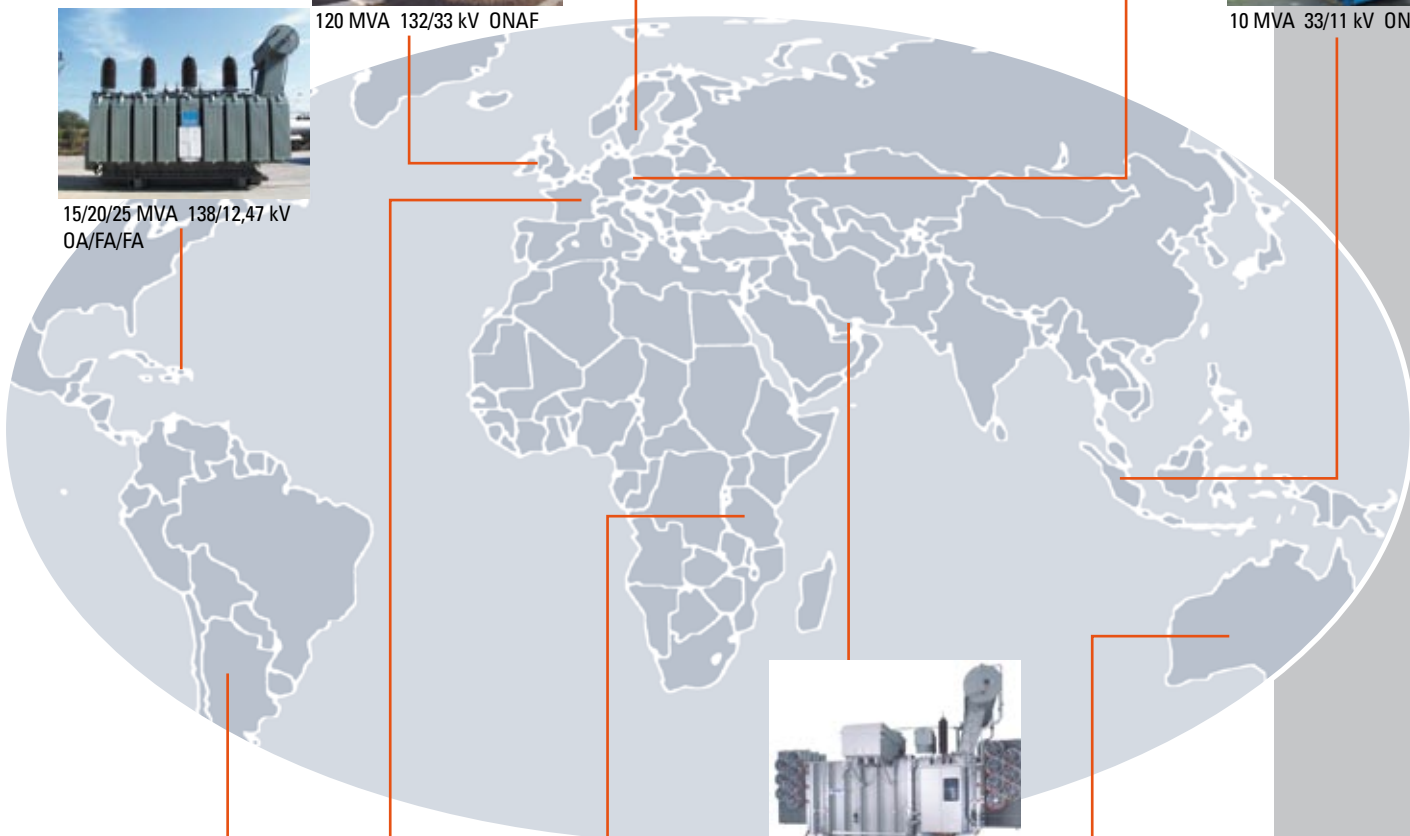
120 MVA 132/33 kV ONAF



10 MVA 33/11 kV ONAN



15/20/25 MVA 138/12,47 kV
OA/FA/FA



31,5/40 MVA 120/22 kV ONAF



28 MVA 24/1,1 kV OFWF



31,5/40 MVA 120/22 kV ONAF



35 MVA 63/15,75 kV ONAF



40 MVA 150/10,5 kV ONAN

We are standing by ready to offer you competent support and advice:

www.sgb-smit.com/contact/enquiry



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